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EXAMINER
WONG, ALLEN C

ART UNIT	PAPER NUMBER
2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/655,698	VISCITO ET AL.
Office Action Summary	Examiner	Art Unit	
	Allen Wong	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>28 March 2008</u>.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-21</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1,3-6,8,10-13 and 15-21</u> is/are rejected.

7) ☒ Claim(s) <u>2,7,9 and 14</u> is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>05 September 2003</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 3/28/08 have been fully read and considered but they are not persuasive.

Regarding lines 12-15 on page 9 of applicant's remarks about claims 1, 8 and 15, applicant states that "constraining, by said encoder, an initial arrival time of said picture into said pre-decoder buffer" and "transmitting, by said encoder, said picture to said pre-decoder buffer in compliance with said initial arrival time." The examiner respectfully disagrees. In column 2, lines 28-44, Acer discloses that the use of the virtual buffer 22 depends on the constraints placed on the encoder buffer delay and the decoder buffer delay by equating the total buffer delay to the sum of the encoder buffer delay and the decoder buffer delay, thus, the decoder buffer delay is equal to the total buffer delay minus the encoder buffer delay, and thus having an initial arrival time for the picture arriving at the pre-decoder buffer 18. Thus, Acer discloses the constraints placed by the encoder with an initial arrival time of the picture into the pre-decoder buffer. In column 2, lines 55-65, Acer discloses the transmission of data in accordance with the initial arrival time as determined by encoder 12. Thus, Acer discloses transmitting, via encoder, the picture to the pre-decoder buffer in compliance with the initial arrival time.

Regarding lines 25-5 on page 10, and line 7 on page 10 to line 1 on page 11 of applicant's remarks, applicant asserts that Acer does not disclose the initial arrival time of a picture in the pre-decoder buffer is no earlier than a difference between an encoder processing time of said picture and an encoder processing time of a previous picture.

The examiner respectfully disagrees. In column 2, line 54 to column 3, line 3, Acer discloses that the encoder buffer delay D_E is the difference between time of removal and time of arrival as shown in figure 2, element 34. Thus, Acer discloses the difference D_E is calculated with the fact that the initial arrival time of data cannot be earlier than the difference D_E since the difference has to come from the previous reference picture and the last, current picture, thereby, the initial arrival time is obtained first before the difference is calculated. Acer discloses the difference calculated between the time of removal of data from encoder and the time of arrival of data from encoder in that the arrival time is not earlier than the difference between the encoder processing time of the picture and the encoder processing time of the previous picture.

The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art to combine the teachings of Veltman and Acer, as a whole, for ensuring proper video encoding/decoding and synchronism of the buffers to ensure a smooth transmission of video data over a transmission channel, as suggested in Acer's column 1, lines 48-50.

Claims 3-6, 10-13 and 17-20 are rejected for at least similar reasons as stated above and in the rejection below for claims 1, 8 and 15.

Thus, the rejection is maintained.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3.   Claims 15-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The "computer readable medium encoded with a computer program including computer executable instructions for..." is not specifically disclosed in the applicant's specification. Since the "computer readable medium" is not specifically disclosed in the applicant's specification, applicant needs to cancel claims 15-21 to overcome the 112, 1st paragraph rejection.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veltman (5,481,543) in view of Acer (6,151,359).

Regarding claims 1 and 15, Veltman discloses a computer readable medium encoded with a computer program including computer executable instructions and a method for encoding each picture in a sequence of pictures using an encoder (col.19, ln.43-47, Veltman discloses the use of an encoder), said method comprising the steps of:

assigning, by said encoder, a pre-decoder buffer removal time to said picture (fig.22A, element 309 and col.37, ln.21-26);

selecting, for said picture, a number of bits, wherein the time-equivalent of said number of bits is no greater than a difference based on said pre-decoder buffer removal time of said picture and an initial arrival time of said picture into a pre-decoder buffer (col.34, ln.14-53, in fig.22B, note that when the first picture enters the pre-decoder buffer 42, it is a at the first time t1, and note the second picture enters the pre-decoder buffer 42 at the second time t2, note the third picture exits the pre-decoder buffer 42 at the third time t3, and note the fourth picture exits the pre-decoder buffer 42 at the fourth time t4; and that at element 52, the time stamps of the pictures are kept track in element 52 and then processed in element 55 for executing the decoding of pictures at video decoder 45, wherein the video input buffer size and video bit rate are used to affect the video input buffer size section 359 to select the number of bits for each picture in a sequence of pictures); and

compressing, by said encoder, said picture to generate said number of bits (col.31, ln.22-24 and fig.22A, element 201A).

Veltman does not specifically disclose constraining, by said encoder, an initial arrival time of said picture into said pre-decoder buffer, and transmitting, by said encoder, said picture to said pre-decoder buffer in compliance with said initial arrival time being no earlier than a difference between an encoder processing time of said picture and an encoder processing time of a previous picture. However, Acer teaches the constraints placed by the encoder with an initial arrival time of the picture into the pre-decoder buffer (col.2, ln.28-44, Acer discloses that the use of the virtual buffer 22 depends on the constraints placed on the encoder buffer delay and the decoder buffer delay by equating the total buffer delay to the sum of the encoder buffer delay and the decoder buffer delay, thus, the decoder buffer delay is equal to the total buffer delay minus the encoder buffer delay, and thus having an initial arrival time for the picture arriving at the pre-decoder buffer 18), and transmitting, via encoder, the picture to the pre-decoder buffer in compliance with the initial arrival time (col.2, ln.55-65, Acer discloses the transmission of data in accordance with the initial arrival time as determined by encoder 12). Acer discloses the difference calculated between the time of removal of data from encoder and the time of arrival of data from encoder in that the arrival time is not earlier than the difference between the encoder processing time of the picture and the encoder processing time of the previous picture (col.2, ln.54 to col.3, ln.3, wherein the encoder buffer delay D_E is the difference between time of removal and time of arrival as seen in fig.2, element 34, thus the difference D_E is calculated with the fact that the initial arrival time of data cannot be earlier than the difference D_E since the

difference has to come from the previous reference picture and the last, current picture,

thus, the initial arrival time is obtained first before the difference is calculated).

Therefore, it would have been obvious to one of ordinary skill in the art to combine the

teachings of Veltman and Acer, as a whole, for ensuring proper video

encoding/decoding and synchronism of the buffers to ensure a smooth transmission of

video data over a transmission channel (Acer col.1, ln.48-50).

Regarding claim 8, Veltman discloses an encoder for encoding a picture in a

sequence of pictures, said encoder comprising:

a compressor configured to compress said picture to generate a number of bits

(col.31, ln.22-24 and fig.22A, element 201A);

wherein said encoder is configured to assign a pre-decoder buffer removal time

to said picture and to select, for said picture, said number of bits (fig.22A, element 309

and col.37, ln.21-26); and

selecting, for said picture, said number of bits, wherein the time-equivalent of

said number of bits is no greater than a difference based on said pre-decoder buffer

removal time of said picture and an initial arrival time of said picture into a pre-decoder

buffer (col.34, ln.14-53, in fig.22B, note that when the first picture enters the pre-

decoder buffer 42, it is a at the first time t1, and note the second picture enters the pre-

decoder buffer 42 at the second time t2, note the third picture exits the pre-decoder

buffer 42 at the third time t3, and note the fourth picture exits the pre-decoder buffer 42

at the fourth time t4; and that at element 52, the time stamps of the pictures are kept

track in element 52 and then processed in element 55 for executing the decoding of

pictures at video decoder 45, wherein the video input buffer size and video bit rate are used to affect the video input buffer size section 359 to select the number of bits for each picture in a sequence of pictures).

Veltman does not specifically disclose said encoder is further configured to constrain an initial arrival time of said picture into said pre-decoder buffer by selecting, and a transmitter configured to transmit said picture to said pre-decoder buffer in compliance with said initial arrival time being no earlier than a difference between an encoder processing time of said picture and an encoder processing time of a previous picture. However, Acer teaches the constraints placed by the encoder with an initial arrival time of the picture into the pre-decoder buffer (col.2, ln.28-44, Acer discloses that the use of the virtual buffer 22 depends on the constraints placed on the encoder buffer delay and the decoder buffer delay by equating the total buffer delay to the sum of the encoder buffer delay and the decoder buffer delay, thus, the decoder buffer delay is equal to the total buffer delay minus the encoder buffer delay, and thus having an initial arrival time for the picture arriving at the pre-decoder buffer 18), and transmitting, via encoder, the picture to the pre-decoder buffer in compliance with the initial arrival time (col.2, ln.55-65, Acer discloses the transmission of data in accordance with the initial arrival time as determined by encoder 12). Acer discloses the difference calculated between the time of removal of data from encoder and the time of arrival of data from encoder in that the arrival time is not earlier than the difference between the encoder processing time of the picture and the encoder processing time of the previous picture (col.2, ln.54 to col.3, ln.3, wherein the encoder buffer delay D_E is the difference between

time of removal and time of arrival as seen in fig.2, element 34, thus the difference D_E is

calculated with the fact that the initial arrival time of data cannot be earlier than the

difference D_E since the difference has to come from the previous reference picture and

the last, current picture, thus, the initial arrival time is obtained first before the difference

is calculated). Therefore, it would have been obvious to one of ordinary skill in the art to

combine the teachings of Veltman and Acer, as a whole, for ensuring proper video

encoding/decoding and synchronism of the buffers to ensure a smooth transmission of

video data over a transmission channel (Acer col.1, ln.48-50).

3.   Claims 3-6, 10-13 and 17-20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Veltman (5,481,543) and Acer (6,151,359) in view of Legall

(5,929,916).

Regarding claims 3, 10 and 17, Veltman and Acer does not specifically disclose

further comprising the steps of: determining a first limit on a number of bits for

compressing said picture and one or more number of bits for compressing one or more

future pictures, wherein said future pictures are in said pre-decoder buffer at said pre-

decoder buffer removal time of said current picture; and compressing said picture using

a first number of bits, wherein said first number of bits complies with said first limit.

However, Legall discloses further comprising the steps of: determining a first limit

on a number of bits for compressing said picture and one or more number of bits for

compressing one or more future pictures, wherein said future pictures are in said pre-

decoder buffer at said pre-decoder buffer removal time of said current picture (col.15,

ln.35-48, Legall discloses the upper limit of the frame's bit budgeting is determined to

prevent overflow when coding future frames like B frames; col.17, ln.9-21); and compressing said picture using a first number of bits (col.15, ln.36-42, the encoder uses the right number of bits to encode data with the first number as determined to ensure no overflow takes place), wherein said first number of bits complies with said first limit (col.15, ln.35-48, Legall discloses the upper limit of the frame's bit budgeting is determined to prevent overflow). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Veltman, Acer and Legall, as a whole for permitting constant bit rate, real-time encoding as well as variable rate encoding in an accurate, efficient manner (Legall col.4, ln.26-31).

Regarding claims 4, 11 and 18, Veltman and Acer does not specifically disclose wherein said first limit is an upper limit and said first number of bits is not higher than said upper limit. However, Legall discloses wherein said first limit is an upper limit and said first number of bits is not higher than said upper limit (col.15, ln.35-48, Legall discloses the upper limit of the frame's bit budgeting is determined to prevent overflow). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Veltman, Acer and Legall, as a whole for permitting constant bit rate, real-time encoding as well as variable rate encoding in an accurate, efficient manner (Legall col.4, ln.26-31).

Regarding claims 5, 12 and 19, Veltman and Acer does not specifically disclose wherein said first limit is a lower limit and said first number of bits is not lower than said lower limit. However, Legall discloses wherein said first limit is a lower limit and said first number of bits is not lower than said lower limit (col.14, ln.25-31 and ln.48-55,

Legall discloses the lower limit of the frame's bit budgeting is determined to prevent

underflow). Therefore, it would have been obvious to one of ordinary skill in the art to

combine the teachings of Veltman, Acer and Legall, as a whole for permitting constant

bit rate, real-time encoding as well as variable rate encoding in an accurate, efficient

manner (Legall col.4, ln.26-31).

Regarding claims 6, 13 and 20, Veltman and Acer does not specifically disclose

further comprising the step of: determining a second limit on a number of bits for

compressing a current picture; wherein said first limit is an upper limit and said second

limit is a lower limit; and wherein said first number of bits is not higher than said upper

limit and said first number of bits is not lower than said lower limit. However, Legall

discloses further comprising the step of: determining a second limit on a number of bits

for compressing a current picture (col.14, ln.25-31 and ln.48-55, Legall discloses the

lower limit of the frame's bit budgeting is determined to prevent underflow); wherein said

first limit is an upper limit and said second limit is a lower limit (col.15, ln.35-48, Legall

discloses the upper limit of the frame's bit budgeting is determined to prevent overflow),

and wherein said first number of bits is not higher than said upper limit and said first

number of bits is not lower than said lower limit (col.15, ln.35-48, Legall discloses the

upper limit of the frame's bit budgeting is determined to prevent overflow, and col.14,

ln.25-31 and ln.48-55, Legall discloses the lower limit of the frame's bit budgeting is

determined to prevent underflow). Therefore, it would have been obvious to one of

ordinary skill in the art to combine the teachings of Veltman, Acer and Legall, as a

whole for permitting constant bit rate, real-time encoding as well as variable rate

encoding in an accurate, efficient manner (Legall col.4, ln.26-31).

Allowable Subject Matter

1.   Claims 2, 7, 9 and 14 are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

2.   The following is a statement of reasons for the indication of allowable subject

matter: The prior art does not specifically disclose further comprising the steps of:

allocating a first number of bits for compressing said picture and one or more number of

bits for compressing one or more future pictures, wherein said future pictures are in said

pre-decoder buffer at said pre-decoder buffer removal time of said current picture;

determining, based on said numbers of bits in said allocating step, which of said future

pictures will be in said pre-decoder buffer at said pre-decoder buffer removal time of

said picture; changing said first number of bits for compressing said picture to allocate a

final number of bits for compressing said picture if said changing is needed to prevent

pre-decoder buffer overflow and underflow; and compressing said picture using said

final number of bits, as disclosed in claim 2. Similarly, claim 9 is patentable for similar

reasons.

Terminal Disclaimer

1.   The terminal disclaimer filed on 4/9/07 disclaiming the terminal portion of any

patent granted on this application which would extend beyond the expiration date of the

full statutory term defined in 35 U.S.C. 154 to 156 and 173 as shortened by any terminal

disclaimer filed prior to the grant of any patent granted on pending second Application

Number 10/600,163, filed on June 19, 2003, of any patent on the pending second

application has been reviewed and is accepted. The terminal disclaimer has been

recorded.

Contact Information

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Allen Wong whose telephone number is (571) 272-7341.

The examiner can normally be reached on Mondays to Thursdays from 8am-6pm

Flextime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John W. Miller can be reached on (571) 272-7353. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen   Wong/

Primary Examiner
Art Unit 2621

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7/9/08